



Beat the Heat

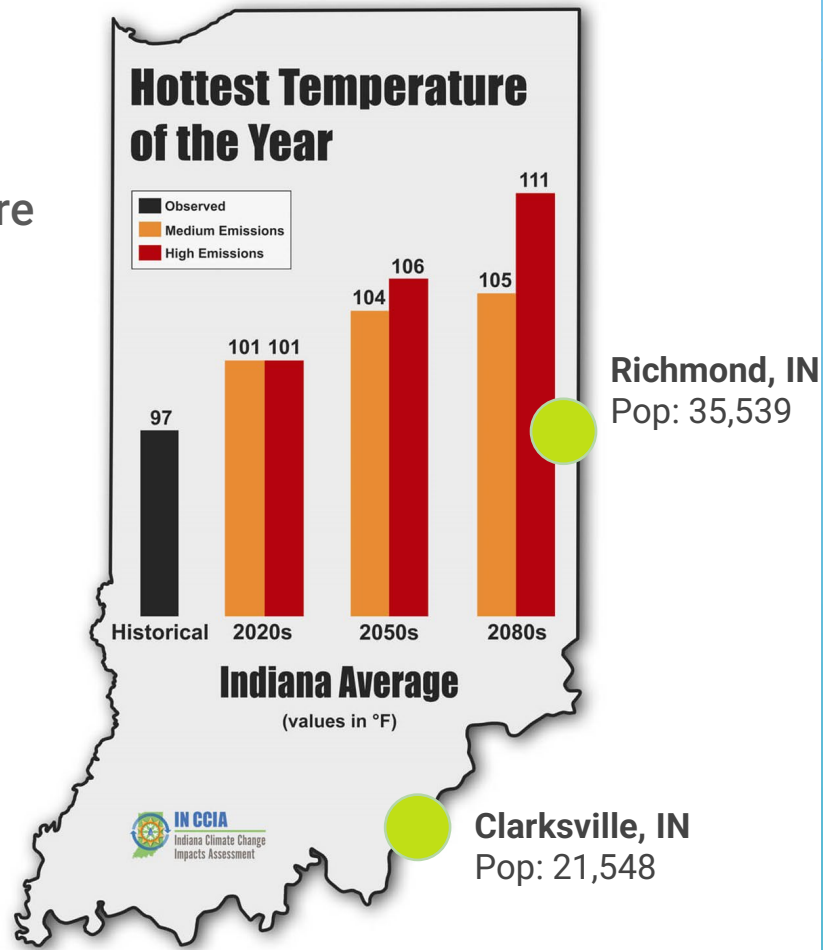
Integrating Community & Equity into Heat
Response Planning

Presented by:

Dana Habeeb | Indiana University

BEAT THE HEAT

A 2-year, grant-funded program to plan and prepare for extreme heat.

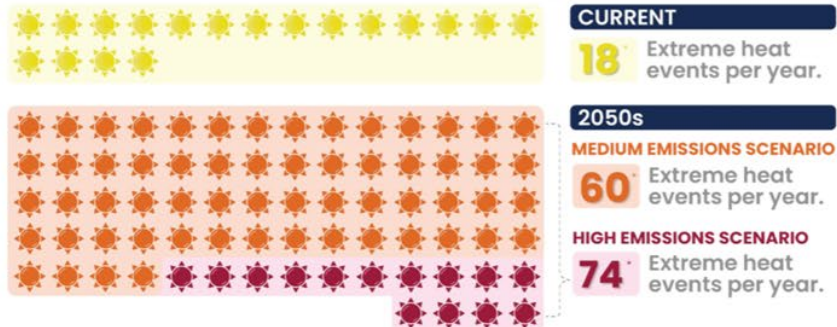


Climate Change

RICHMOND

BY THE 2050s

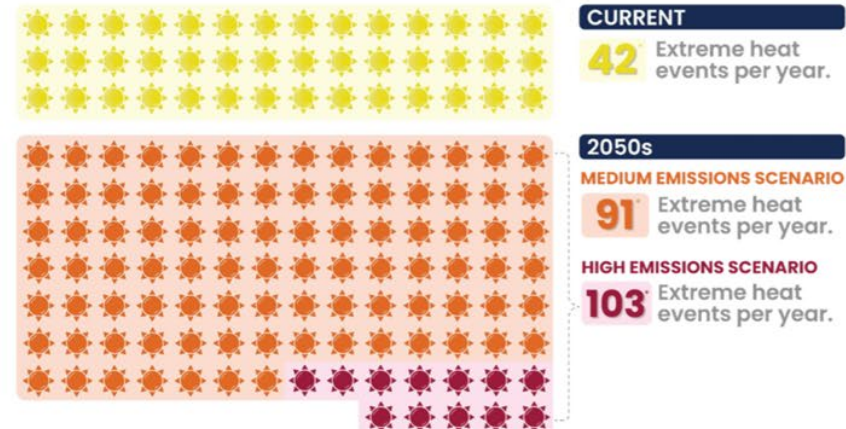
Extreme heat events in Richmond will more than triple.



CLARKSVILLE

BY THE 2050s

Extreme heat events in Clarksville will more than double.



Source: Indiana University's Environmental Resilience Institute:
Hoosier Resilience Index

Project Timeline

BEAT THE HEAT PROGRAM TIMELINE



Phase 1 Overview

1. City/town announces program participation
2. Hire full-time Heat Relief Coordinator
3. Establish Heat Relief Task Force



Phase 2 Overview

1. Collect community input
 - a. Focus groups
 - b. Interviews
 - c. Heat vulnerability comment survey
 - d. Community heat management observations
2. Complete a Heat Watch Campaign
3. Create Heat Vulnerability Index
4. Develop community needs assessment presentation

Public Survey

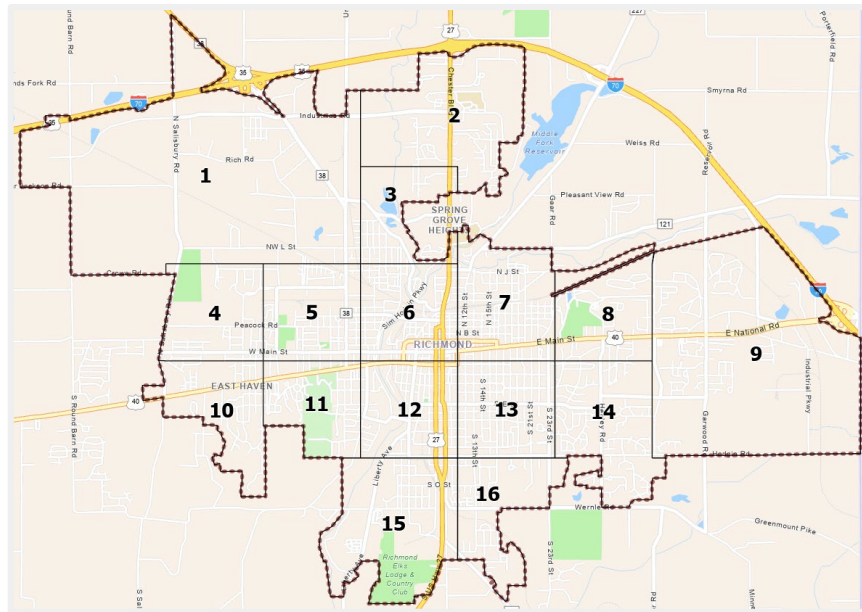
Heat Vulnerability Comment Survey

Available in:

- Electronic and Paper Formats
- Spanish and English

Asks questions about:

- Heat awareness and risk
- Exposure to extreme heat
- Cooling down at home
- Community amenities
- Cooling centers
- Peer-to-peer community support
- Information access
- Demographics

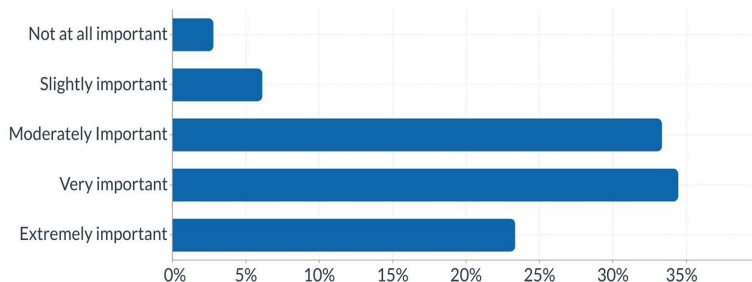


PHASE 1
Program
1st-10th

Public Survey

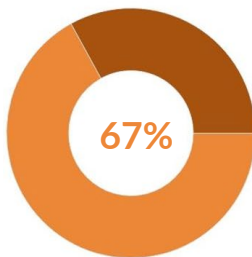
53% of survey respondents believe high heat is at least a moderate threat to their personal health

How important do you think high heat is in the community?

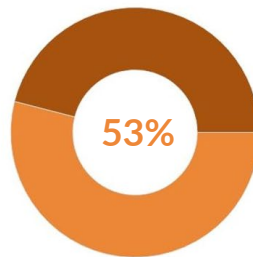


"Our only source of cooling are fans by fans [sic] placed throughout the house, but we are unable to keep them going for too long because it drives our electric bill up and we can barely afford our electric bill as it is."

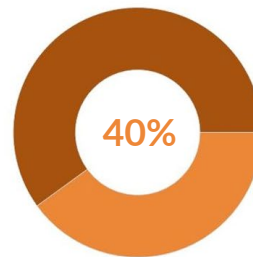
These things can bring down temperatures in your neighborhood. Which might you like to see more of close to home?



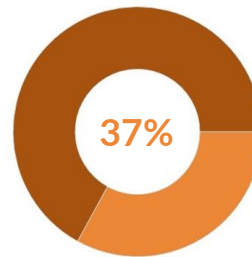
Tree Planting



Gardens and
Green Space



Cool Roofs



Parks

1 in 3



people that took the survey experience a barrier to using their home cooling system

"It's (heat) something I think about all of the time and there are times when me and my daughters will get into the car and go for a ride because it's much cooler in the car with the air conditioning on than it is in the house."

Top Two Barriers of Home Cooling

Cost of
Bills

Cost of
Repairs

43% of survey respondents have experienced heat exhaustion

Focus Groups

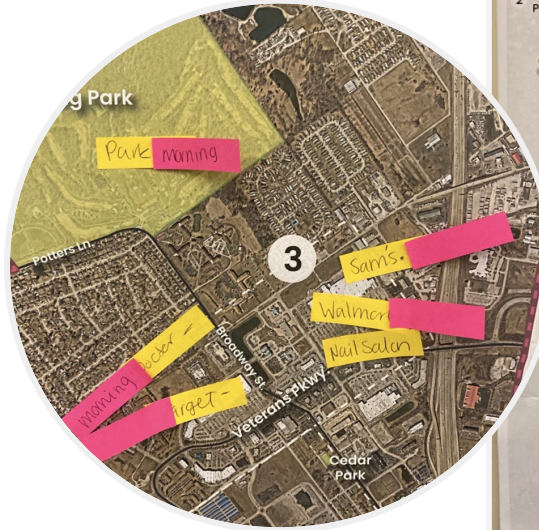
Groups spoken with:

- Outdoor Workers
- Older Adults (65+)
- Parents
- Youth (14-18)
- Government Employees

Discussion topics:

- Community asset mapping activity
- Heat awareness and concern
- Personal experiences with heat
- Group-specific questions
- Recommended strategies

Mapping Activity with Senior Housing Residents



Places where you spend time outside or walk/bike/roll to.



Places that you avoid on a hot day.



Focus Groups

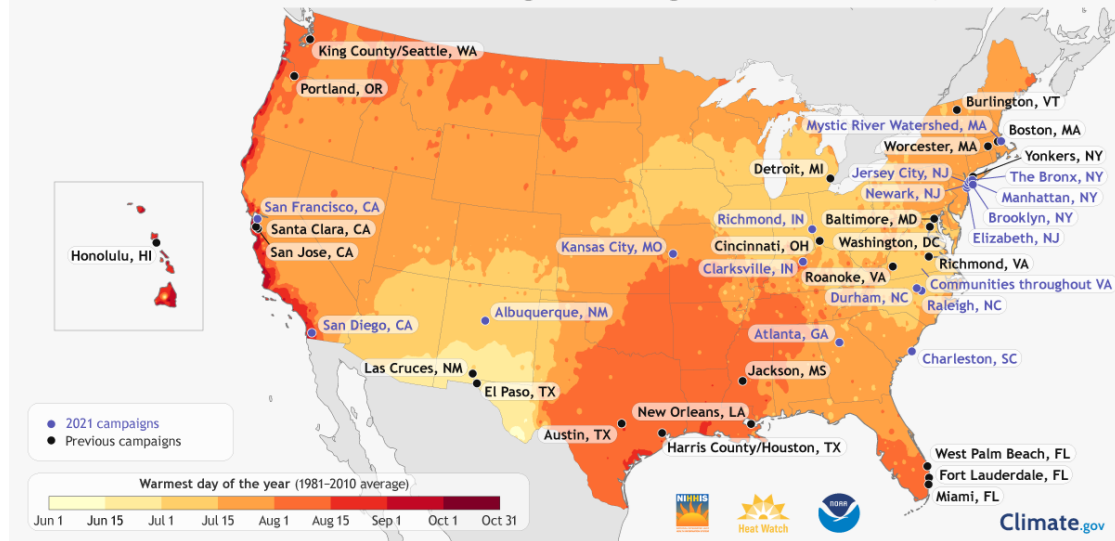
	PARTICIPANTS	MAIN TAKEAWAYS
Government Employees	12	There needs to be more cross-organizational collaboration when it comes to extreme heat. Fire and Police have some strategies to mitigate heat impacts on first responders such as rotating employees in the field, mandatory water breaks, and health education.
Outdoor Workers	19	Having the flexibility at work to take breaks and access water whenever necessary is a vital tool for them when combating heat related illness. Almost everyone has experienced symptoms of a heat-related illness on the job, are aware of preparedness strategies, but consider heat exposure to just be a condition of the job.
Youth/High School Athletes	8	Athletes had a limited knowledge about heat-related illness. Participants noted that despite being bothered by the heat, they frequently feel like they need to push through discomfort to complete their practices . The school switches practice times on hot days to cooler times.
Older Adults	9	The majority of participants expressed that during hot days they alter their plans and schedules. Outdoor recreation and walking to key destinations on hot days is challenging.
Parents	6	Parents noted that water availability in the City is not dependable, forcing them to always think about it ahead of time or go without.



Heat Watch Campaign

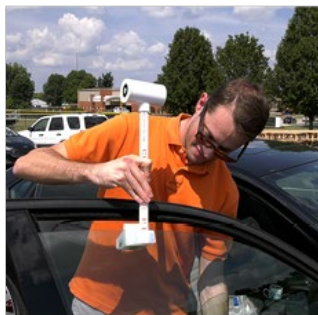
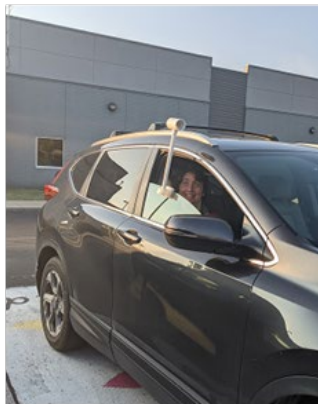
- In partnership with CAPA Strategies, NOAA, and NIHHIS
- Citizen-science data collection effort
- Sensors affixed to cars/bikes gather data every second each hour
- Deliverable: Heat map created by CAPA strategies

NOAA Urban Heat Island Mapping Campaigns: All Locations, 2017-2021



Heat Watch Campaign

- In partnership with CAPA Strategies, NOAA, and NIHHS
- Citizen-science data collection effort
- Sensors affixed to cars/bikes gather data every second each hour
- Deliverable: Heat map created by CAPA strategies



13

Volunteers

6

Routes

34,454

Measurements

91.8°

Max Temperature

12.5°

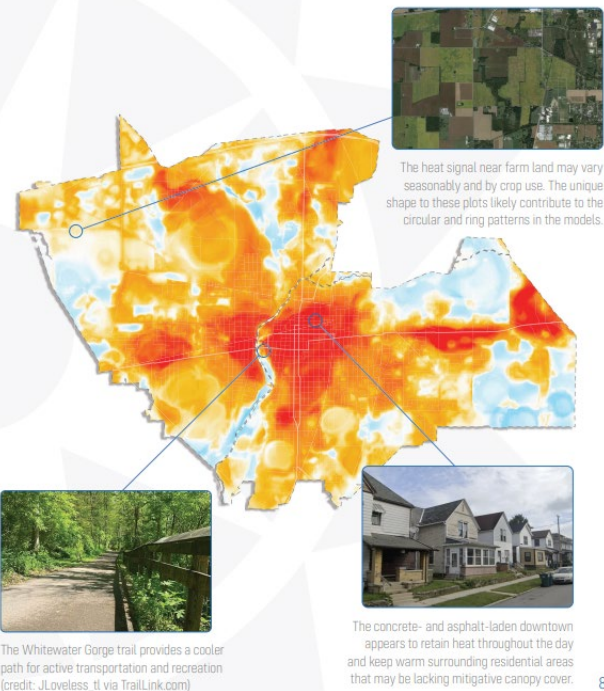
Temperature Differential

RICHMOND



Initial Observations

The distribution of heat across a region often varies by qualities of the land and its use. Here are several observations of how this phenomenon may be occurring in your region.



8

17

Volunteers

7

Routes

24,311

Measurements

94.8°

Max Temperature

8.9°

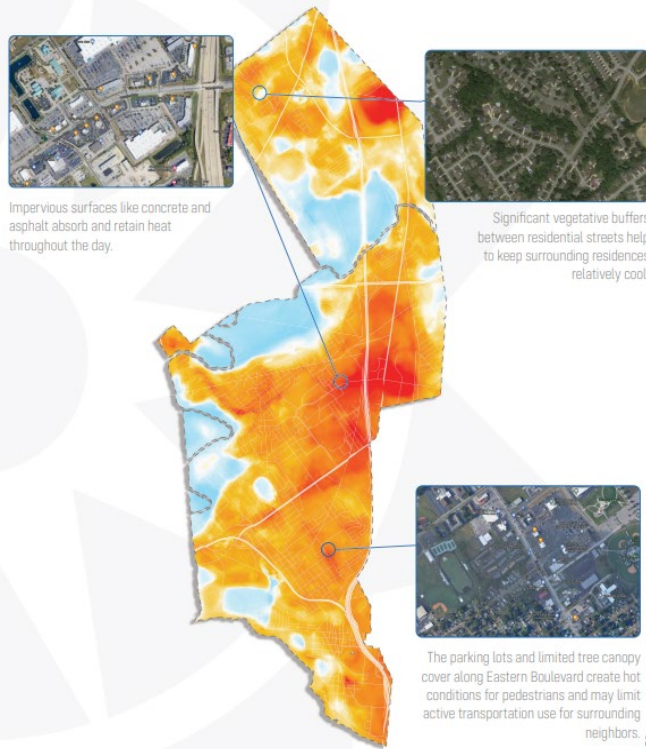
Temperature Differential

CLARKSVILLE



Initial Observations

The distribution of heat across a region often varies by qualities of the land and its use. Here are several observations of how this phenomenon may be occurring in your region.



8

Heat Map Utilization

- Tool for public engagement with releases in Clarksville's town magazine, radio interviews, focus groups, story map.
- Identify areas where cooling interventions are most needed in both communities.
- Support the creation of the Heat Vulnerability Index, which overlays heat map with relevant demographics.

Clarksville's Heat Distribution on a Hot Summer Evening.

Measured by community volunteers on Monday, August 23rd from 7-8pm.

CLARKSVILLE
INDIANA

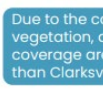


Learn more about Clarksville's heat island with the Town's interactive story map.

[Tinyurl.com/ClarksvilleHeatStory](https://tinyurl.com/ClarksvilleHeatStory)



1 Significant vegetative buffers between residential streets help to keep surrounding residences relatively cool.



2 Due to the cooling effects of vegetation, areas with more tree coverage are up to 7.2° F cooler than Clarksville's hottest spots.

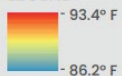


3 Impervious surfaces like concrete and asphalt absorb heat during the day and retain it longer overnight.



4 Parking lots and limited tree cover along Eastern Boulevard create hot conditions for people nearby.

LEGEND



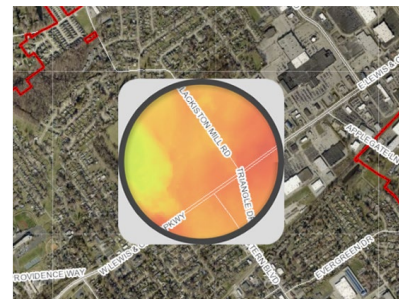
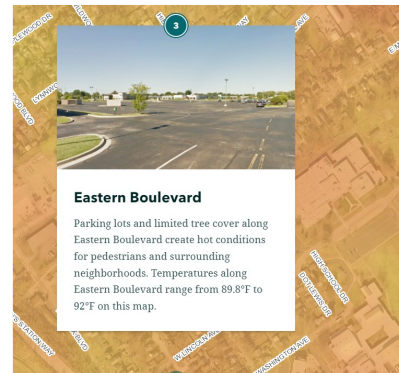
Town Boundary
Major Road



0 0.5 1 2 Miles



ONLINE STORY MAP



Heat Vulnerability Index

Goals for HVIs

- Identify areas that are most vulnerable to heat.
- Provide communication tools and grow engagement with communities
- Generate knowledge for heat management strategies
- Target heat strategies for priority areas
- Support tailoring interventions for specific communities

What Makes up an HVI?

Common Vulnerability Indicators

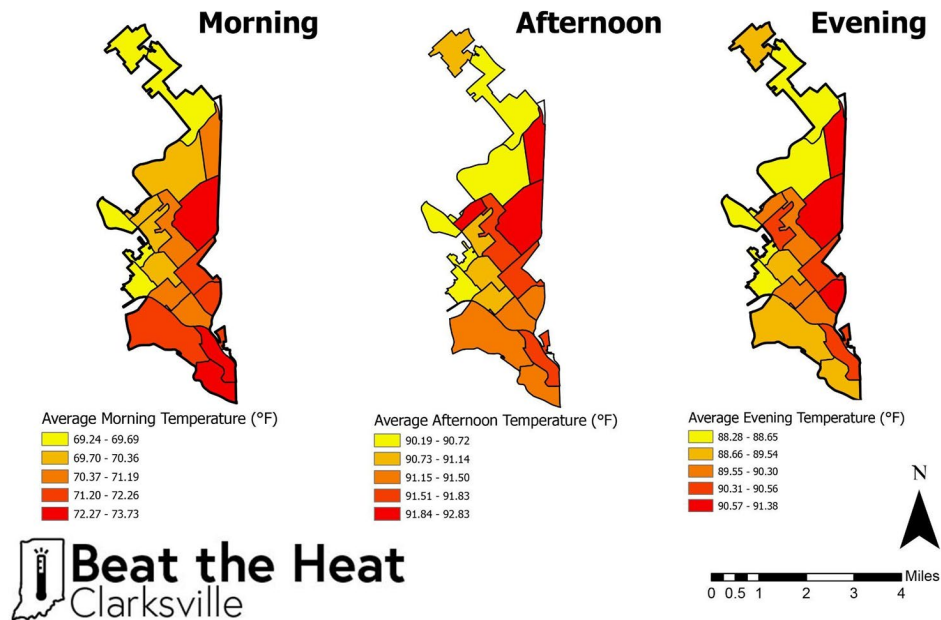
- Environmental Exposures- I.E High Heat Days
- Sensitivity- I.E Old Age
- Adaptive Capacity- I.E Access to Air Conditioning

Heat Vulnerability Index

What Makes up an HVI? Heat Exposure

- Beat the Heat HVI Vulnerability Indicators:
 - Environmental Exposure: Extreme Heat
 - Average evening temperatures

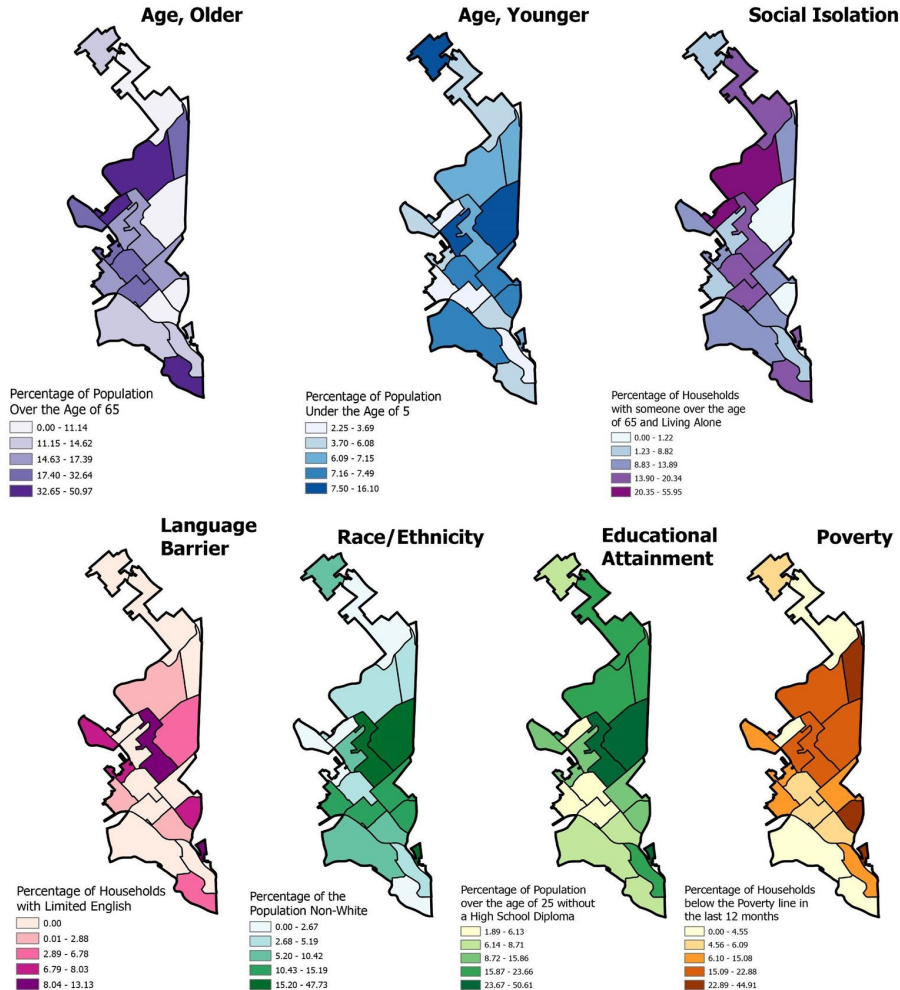
Clarksville Average Block Group Temperatures



Heat Vulnerability Index

What Makes up an HVI? Sensitivity Score

- Beat the Heat HVI Vulnerability Indicators:
 - Sensitivity - Sociodemographic Factors:
 - Age (Over 65 & Under 5)
 - Educational Attainment
 - Race/Ethnicity
 - Language Barrier
 - Poverty
 - Social Isolation
 - Principal component analysis to combine all variables into one sensitivity score



Heat Vulnerability Index

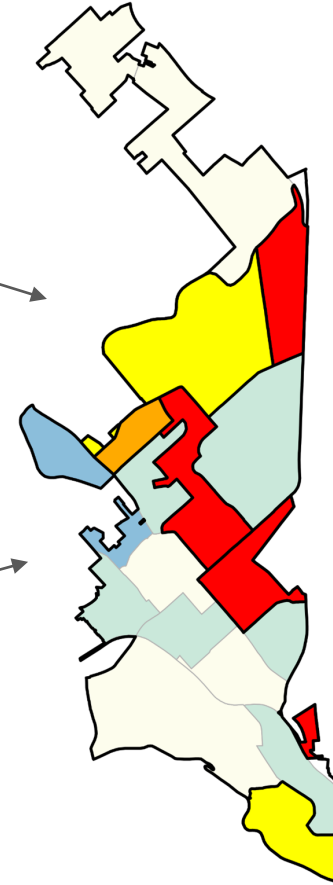
Process:

- Ranked ordered each heat vulnerability indicator.
- Overlaid heat exposure and sensitivity score rankings.
- Identified block groups that had the highest ranking for each indicator.

**Heat
Exposure**

**Sensitivity
Scores**

Clarksville, Indiana
Priority Areas

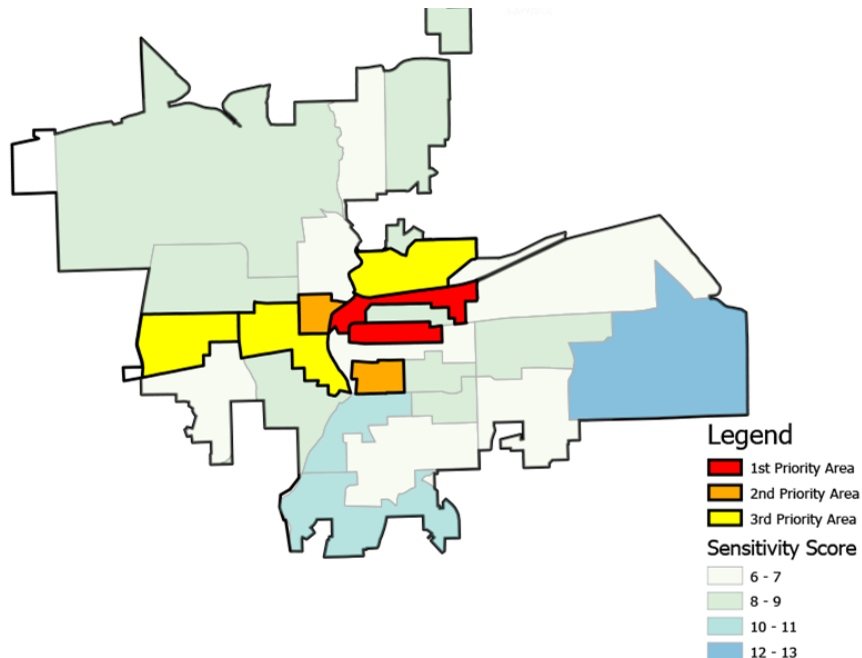


Legend

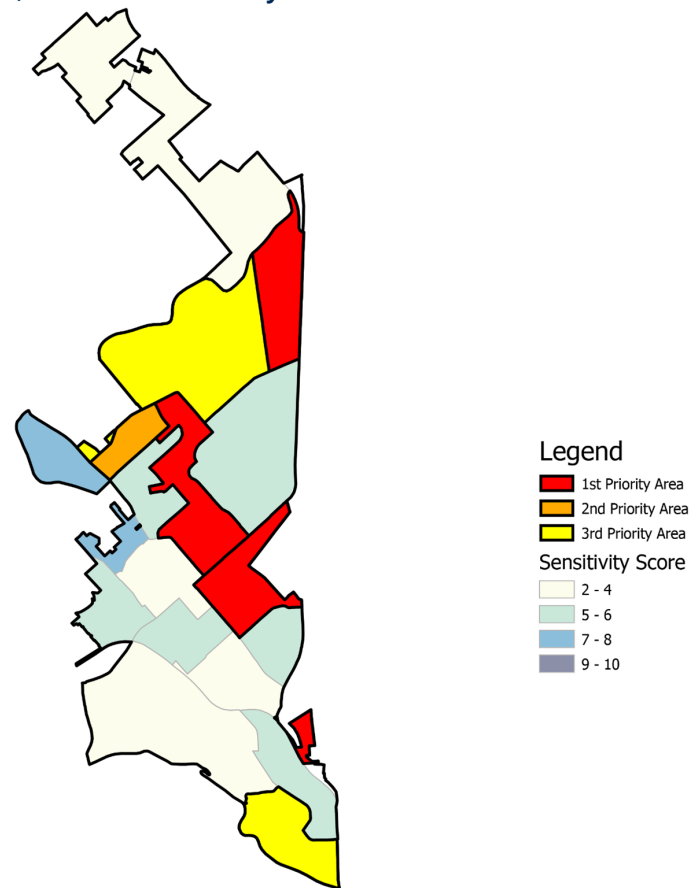
- 1st Priority Area
- 2nd Priority Area
- 3rd Priority Area
- Sensitivity Score
- 2 - 4
- 5 - 6
- 7 - 8
- 9 - 10

Heat Vulnerability Index

Richmond, Indiana Priority Areas

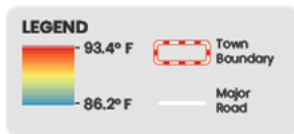


Clarksville, Indiana Priority Areas

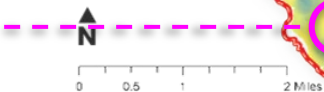


PLANNED PROJECTS

Seeking grant for tree plantings to shade sidewalk near I-65 interchange.

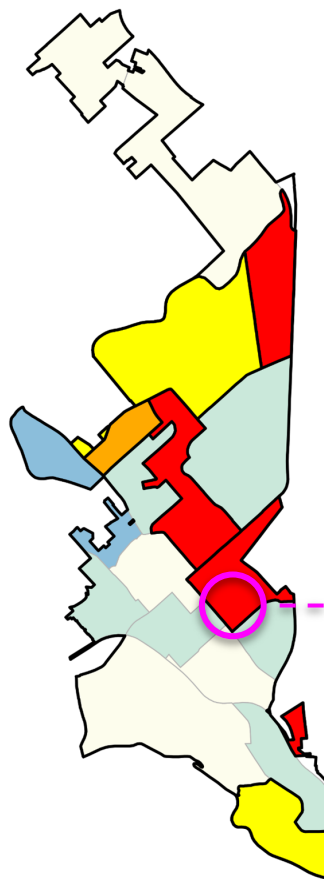


Seeking grant for cooling infrastructure/amenities and public art.



Maps can inform projects like...

- Bus stop amenities
- Cooling centers and transportation during heat events
- Priority areas for window unit distribution



Planned tree plantings on residential properties.

Project Timeline



HEAT MANAGEMENT PLAN

HEAT MANAGEMENT STRATEGY

- Develop short and long-term strategies and goals to address extreme heat.
 - **Home Cooling Strategies:** household energy efficiency, utility shut-offs, home cooling assistance.
 - **Public Outreach:** cooling centers, heat preparedness education, workshops, community engagement.
 - **Community Design:** a climate-responsive design project with additional goals for tree planting, green infrastructure, cool surfaces, public shading, water access.

HEAT WAVE RESPONSE PROTOCOL

- Identify systems for notifying the public of heat waves.
- Determine temperature thresholds for activating/deactivating the protocol.
- Develop strategies to support vulnerable populations during a heat wave.
- Develop guidelines for regularly evaluating and updating the protocol.

HEAT MANAGEMENT PLAN

The plan is divided into four sections...

- A** Heat Wave Response Protocol
- B** Public Outreach Strategies
- C** Home Cooling Strategies
- D** Climate Responsive Design Strategies

			Phase 4: Program Implementation					Phase 5: Continuity Planning				
			2022					2023				Long-Term
			Jun.	Jul.	Aug.	Sep.	Fall	Winter	Spring	Summer		
A. Heat Wave Response Protocol	A1.a	County Heat Alert System										
	A1.b	Heat Alert Registration										
	A1.c	Local Organization Directory										
	A1.d	Town Heat Wave Announcements										
	A2.a	Cool Kits										
	A2.b	Heat Wave Check-In Program										
	A2.c	Transportation to Cooling Centers										
	A3.a	Promote Existing Cooling Opportunities										
	A3.b	TOC Heat Emergency Cooling Center										
	A3.c	Cooling Center Guide										
B. Public Outreach	B1.a	Heat Preparedness Materials										
	B1.b	Heat Preparedness Toolbox										
	B1.c	Centralized Website										
	B2.a	Trainings for Health and Social Service Professionals										
	B2.b	Community Heat Health Workshops										
	B2.c	Community Heat Health Workshops										
C. Home Cooling	C1.a	Home Cooling Educational Materials										
	C2.a	Window Unit Program										
	C3.a	Utility Bill Assistance										
D. Climate Responsive Design	D1.a	Public Design Projects										
	i.	Cool Bus Stops										
	ii.	Cooling Amenities in Parks and Pedestrian Spaces										
	iii.	Shaded Impervious Surfaces										
	iv.	Green Infrastructure										
	D1.b	Sustainable Development Program										
	D2.a	Tree Giveaway Program										
	D2.b	Neighborhood Tree Plantings										
	D3.a	Youth Engagement										
	D3.b	Waste Heat Outreach										

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Summer 2022

Implement strategies related to public health awareness and preparedness.

Fall 2022 - Spring 2023

Pursue grants, implement and refine other strategies as possible, develop Continuity Plan.

Summer 2023

Submit Continuity Plan as an update to the Heat Management Plan



Beat the Heat

Integrating Community & Equity into Heat
Response Planning

Dana Habeeb | Indiana University
dhabeeb@iu.edu